

CLAIMS

1.Four-wheeled vehicle (1) with two steered front wheels (2, 3) comprising a frame (13), handlebars (16), two rear wheels (4, 5) and a front suspension group (6) that acts upon said two front wheels (2, 3) characterised in that said front suspension group allows the rolling of the vehicle.

2.Four-wheeled vehicle (1) according to claim 1, characterised in that said front suspension group (6) comprises at least two shock absorbers (22), at least two horizontal cross members (7,8), connected through at least two hinges (9,9',10,10') to said frame (13) and at least two vertical suspension elements (11,12) firmly connected to said two cross members (7,8) so as to form an articulated quadrilateral for the rolling of the vehicle (1).

3.Four-wheeled vehicle (1) according to any one of the previous claims, characterised in that said horizontal cross members (7,8) are connected at its ends to said vertical suspension elements (11,12) through hinge elements (57).

4.Four-wheeled vehicle (1) according to any one of the previous claims, characterised in that at least one

of said horizontal cross members (7,8,8') is made in two elements (8,8') connected to said frame (13).

5 Four-wheeled vehicle (1) according to any one of the previous claims, characterised in that each of said horizontal cross members (7,8,8') is made in a single component.

6 Four-wheeled vehicle (1) according to any one of the previous claims, characterised in that said suspensions (11,12) are connected to the hubs (21) of 10 said front wheels (2,3) and each comprise a shock absorber (22).

7 Four-wheeled vehicle (1) according to claim 2 or 3, characterised in that each of said vertical suspension elements (11,12) has an arched shape 15 suitable for at least partially surrounding said front wheel (2 or 3) to reduce the transversal bulk of said vehicle (1).

8 Four-wheeled vehicle (1) according to claim 7, characterised in that said lower cross member (8) 20 comprises two half-arms (8',8''), each half-arm (8',8'') extending from said central hinge (10',10') to said end hinge (57).

9.Four-wheeled vehicle (1) according to any one of claims 7 or 8, characterised in that each vertical suspension element (11,12) comprises at least one connecting rod (54) for connection with the hub of the front wheel; each of said connecting rods (54) comprising at least one cylindrical hinge (55,56) at its ends.

10.Four-wheeled vehicle (1) according to claim 9, characterised in that each shock absorber (22) works between a said vertical suspension element (11,12) and a said connecting rod (54).

11.Four-wheeled vehicle (1) according to claim 10, characterised in that each end hinge (57) of a said half-arm (8'8") of the lower cross member (8) is directly integral with said connecting rod (54).

12.Four-wheeled vehicle (1) according to claim 8, characterised in that said front suspension group (6) also comprises at least one upper connecting rod (60) to connect said upper cross member (7) to each vertical suspension element (11,12).

13.Four-wheeled vehicle (1) according to claim 12, characterised in that said front suspension group (6) also comprises at least one cylindrical hinge (61) to

connect said connecting rods (60) to said upper cross member (7) and at least one ball joint (62) to connect said connecting rod (60) to said vertical suspension element (11,12).

5 14.Four-wheeled vehicle (1) according to claim 13, characterised in that each shock absorber (22) is connected to said lower half-arm (8' or 8") through a hinge element (63) and to the upper cross member (7) through said hinge (61).

10 15.Four-wheeled vehicle (1) according to claim 12, characterised in that said front suspension group (6) also comprises at least one cylindrical hinge (64) to connect said connecting rod (60) to said upper cross member (7) and at least one ball joint (65) to connect
15 said connecting rod (60) to said vertical suspension element (11,12).

16.Four-wheeled vehicle (1) according to claim 15, characterised in that said front suspension group (6) also comprises at least one cylindrical hinge (66) to
20 connect said connecting rods (60) to said shock absorber (22).

17.Four-wheeled vehicle (1) according to claim 16, characterised in that said shock absorber (22) is also

connected to said middle of the upper cross member (7) through said hinge (9).

18. Four-wheeled vehicle (1) according to claim 7, characterised in that each lower cross member (8) and
5 upper cross member (7) comprises two half-arms (7', 7'', 8', 8''), each half-arm (7', 7'', 8', 8'') extending from said central hinge (9', 9'', 10', 10'') to an end hinge (57).

19. Four-wheeled vehicle (1) according to claim 18,
10 characterised in that said front suspension group comprises an oscillating plate (70) rotatably hinged, through at least one cylindrical hinge (71) to said frame (13).

20. Four-wheeled vehicle (1) according to claim 18
15 or 19, characterised in that each shock absorber (22) is connected to said oscillating plate (70), through a hinge element (73), and to said vertical suspension element (11 or 12) through said ball joint (57).

21. Four-wheeled vehicle (1) according to any one
20 of the previous claims, characterised in that it also comprises a rear suspension group (14), a traction transmission system (15) and a coupling system between said frame (13) and an engine unit (35) to dampen the

vibrations between said engine unit (35) and said frame (13).

22.Four-wheeled vehicle (1) according claim 21, characterised in that said coupling system between said frame (13) and said engine unit (35) comprises at least one front connection group and at least two rear connection groups (23); said two rear connection groups (23) being arranged laterally on opposite sides of said engine unit (35) so as to couple with said frame (13) to allow exclusively movements of said engine unit (35) substantially in the vertical plane of the vehicle (1).

23.Four-wheeled vehicle (1) according to claim 22, characterised in that said two rear connection groups (23) are arranged laterally on opposite sides of said engine unit (35) at the drive shaft (24).

24.Four-wheeled vehicle (1) according to claim 23, characterised in that each said rear connection group (23) comprises at least one roller device.

25.Four-wheeled vehicle (1) according to claim 24, characterised in that each rear connection group (23) comprises at least one silentblock.

26.Four-wheeled vehicle (1) according to claim 25, characterised in that each said rear connection group

(23) comprises at least one roller device and at least one silentblock coupled together.

27. Four-wheeled vehicle (1) according to any one of claims 21 to 25, characterised in that said traction
5 transmission system (15) comprises a first sprocket (33), a first drive chain and/or belt (27) acting between the drive shaft (24) of said engine unit (35) and a differential (28) and second sprockets (29) and second drive chains and/or belts (30), acting between
10 said differential (28) and the rear wheels (3, 4) of said vehicle (100).

28. Four-wheeled vehicle (1) according to any one of the previous claims 21 to 26, characterised in that said rear suspension group (14) comprises two
15 suspensions (31, 32) with independent longitudinal arms.